# PUTATIVE LOWER CRETACEOUS AUSTRALIAN LIZARD JAW LIKELY A FISH

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A jaw fragment from Lower Cretaceous beds of Victoria has been identified as that of a lacertilian. If correct this would be the oldest known lacertilian cranial material from Australia. The acrodont, transversely broadened teeth of uniform size lack cusps and are well separated from one another in the tooth row. We have not been able to match these features in any Mesozoic reptile. Thus we conclude that the jaw fragment probably derives from a large teleost fish. ☐ *Early Cretaceous, Victoria, Australia, Koonwarra, teeth, lizard.*

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A fragmentary jaw from the Lower Cretaceous of Victoria has been labelled as lizard. The jaw was collected by a Field Museum of Natural History field party, probably in 1964. According to a letter from W. Turnbull (Chicago) to J. Warren (Melbourne), the locality is uncertain. Collecting at that time was carried out at the Koonwarra pond deposits and at coastal deposits at Cape Paterson. Comparison of the matrix in which the fragment was found with samples from both Koonwarra and Cape Paterson was inconclusive. An impressive fauna of fishes (Waldman, 1971), mostly teleosts, but with some dipnoans and invertebrates (Jell and Duncan, 1986), has been recovered from Koonwarra. These rocks are assigned to the Strzelecki Gr., of Valagianian to Aptian age (approximately 113-138 million years ago: Dettman, 1986). The Cape Paterson deposits also are the Strzelecki Gr., and have been studied extensively by T. and P. Rich. They have yielded a fauna of fish, turtles, dinosaurs (Rich and Rich, 1989) and a single humerus probably from a lizard (Molnar, 1980).

FIG. 1. The jaw fragment (PR1425) from the early Cretaceous of Victoria labelled as lizard. The teeth are visible toward the top: the bevelled appearance may be seen of the second and third from the right: the first and fourth are clearly broken. Scale in mm.

If the identification of the jaw is correct, it is the oldest known Australian lizard material identifiable to a level below suborder. Molnar's (1980) likely lizard humerus - from the Strzelecki Gr. at Eagles Nest, on the Gippsland coast - lacked the articular ends and thus is not identifiable more precisely than as 'lacertilian'.

The oldest Australian lacertilian material identifiable to familial level or below is of Miocene age (Estes, 1984; Molnar, 1985, and references cited therein; Covacevich et al., 1990). Since lizards were present in the Jurassic, potentially a very substantial portion of lacertilian history in Australia is completely unknown. Thus study of the Victorian fragment is potentially very significant for understanding the evolution of Australian lepidosaurs. We here describe this specimen and show that it seems, after all, not to be a lizard but is most likely a teleost fish. (The reference of Molnar (1985) to lepidosaur

FIG. 2. Occlusal view of the teeth of PR1425: the gaps between successive teeth can be seen at the arrow. Scale in mm.

material from the Lower Cretaceous Toolebuc Fm. of Queensland, is also incorrect: this vertebra appears to derive from a diminutive archosaur).

The specimen is catalogued as Field Museum of Natural History (Chicago) PR1425: it consists of a fragment of jaw 16mm long, 5mm in maximum thickness and 7mm in maximum depth (Fig. 1). The entire edge opposite the dentigerous margin is broken. The fragment is now embedded in transparent resin to reinforce the fragile bone. Six teeth are preserved, three apparently complete, and three broken apically, with spaces for four more present. Each crown is separated from its neighbours by a distinct gap, apparently of uniform width along the series. The blunt teeth are acrodont, and triangular in anterior aspect. They are anteroposteriorly compressed (Fig. 2). In lateral view the basal half of the crown has almost parallel margins, but in the apical half one margin becomes inclined so as to intersect the other (Fig. 1), giving the crown a bevelled or chisel-like appearance. The teeth are set at a very slight inclination to the dentigerous margin and are uniform in size. None show cusps, striae, denticles or other such structures. There are no resorption pits or other indication of tooth replacement. The bone of the jaw is not sculptured, and lacks foramina. One face of the jaw fragment is slightly convex, while the other (the embedded face) is concave, so that the bone thins away from the dentigerous edge, and apparently broadens abruptly to form that margin. It is unfortunately impossible to be certain of this because of the resin. Because of the fragmentary nature of the specimen, it is also impossible to determine if this fragment derives from the upper or lower jaw.

The acrodont tooth emplacement contraindicates reference to such Cretaceous reptiles as have thecodont (archosaurs) or pleurodont teeth. Most modern lepidosaurs have pleurodont teeth: acrodont dentitions are found among agamids and chamaeleonids (Edmund, 1969). Acrodonty is also found in amphisbaenians (Gans, 1960) - which may be eliminated because of their quite different tooth form - and sphenodontians. Tranversely broadened teeth are found in some sphenodontians (Throckmorton et al., 1981; Fraser, 1986) and trilophosaurs (Gregory, 1945; Robinson, 1957). Trilophosaurs have tricuspate, wedge-shaped, often dilated crowns, distinct from those of the Victorian fragment. Most of the few sphenodontians with transversely widened teeth have teeth that noticeably increase in size posteriorly (Throckmorton et al., 1981, fig. 5; Fraser, 1986, fig. 5). The most similar dentition is that of the sphenodontian *Eilenodon robustus* (Rasmussen and Callison, 1981) from the Upper Jurassic Morrison Fm. of Colorado. Its teeth are transversely broadened pyramids, showing considerable wear. They are placed in the jaw very close to one another, without the distinct separation shown in the Victorian fragment. Sphenodontians seem either to lack transversely broadened teeth, or where such teeth are present, to lack teeth that are distinctly separated. Thus neither trilophosaurs nor sphenodontians seem sufficiently similar to the Victorian fragment for reference.

Comparison was carried out with a variety of Australian modern and Miocene (Riversleigh) lacertilian material. Overseas material, both modern and fossil, was compared using the literature. Lacertilian teeth, when compressed, are almost always longitudinally rather than transversely compressed: one of the few exceptions is *Polyglyphanodon sternbergi* (Gilmore 1942). This longitudinal compression is especially obvious for acrodont lacertilians, such as agamids and chamaeleontids. The lacertilian (and sphenodont) teeth examined by us uniformly taper toward the tip and do not show bevelled form of the Victorian crowns (including those of *Polyglyphanodon*). The only reported bevelled lacertilian crowns are those of the teiid *Macrocephalosaurus ferrugenous* (Gilmore, 1943). Only a single crown, however, was considered, with some doubt, to be unworn and this exhibited low cusps.

We have been unable to find any convincing match between the crowns of the Victorian fragment and the teeth of known Mesozoic or later reptiles. Thus we conclude that this jaw fragment is not demonstrably reptilian: it is clearly not referable to any of the (few) known Lower Cretaceous Australian reptiles (mostly archosaurs). Presumably it derives from one of the many teleost taxa known from this deposit.

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